An Examination of Alternative Winter Deicing Methods for Porous Asphalt

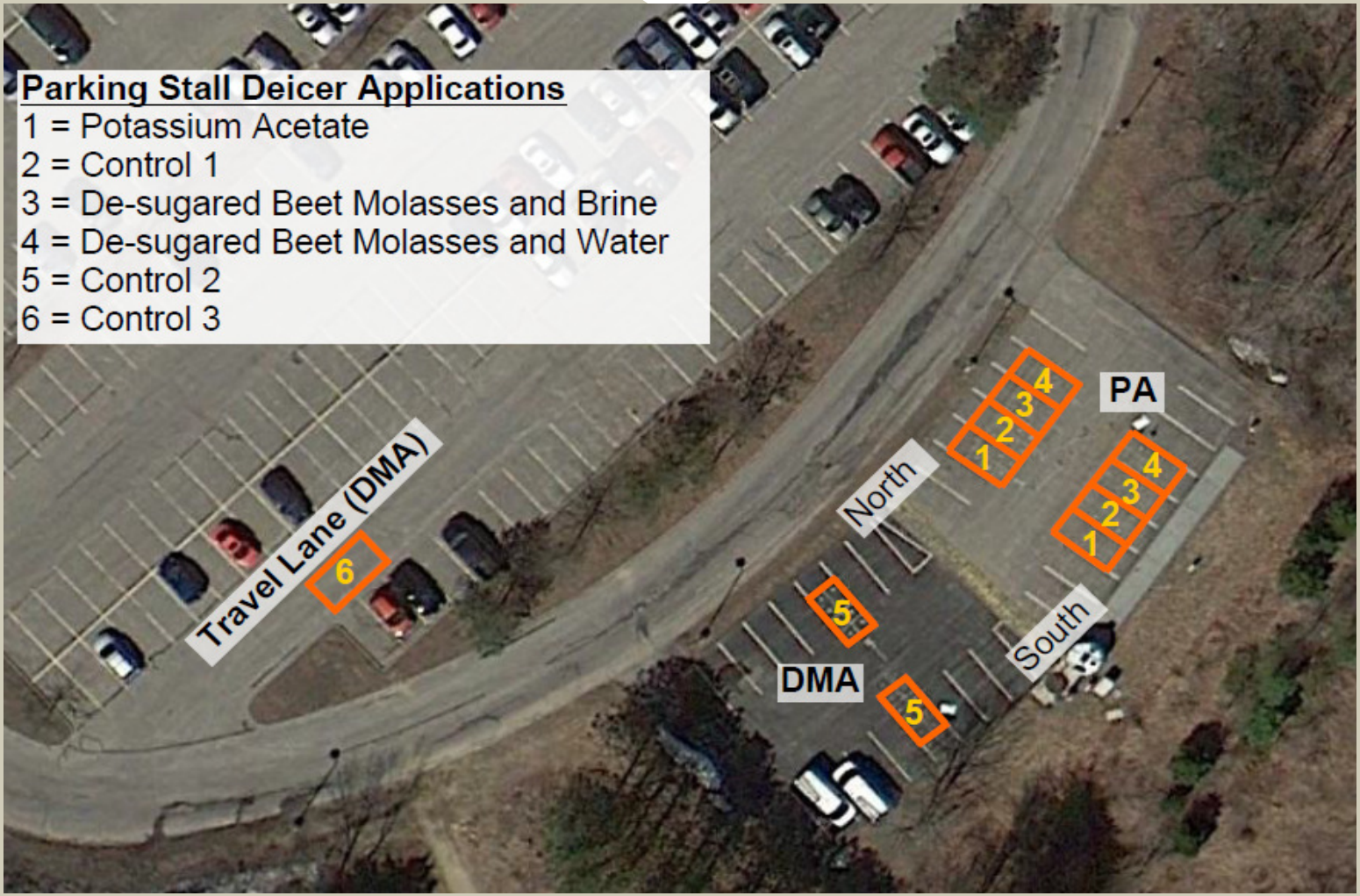
Why Conduct this Research?

Research Objectives

- Examine effectiveness of reduced/non chloride deicers on porous asphalt and compare to traditional salting methods on dense mix asphalt.

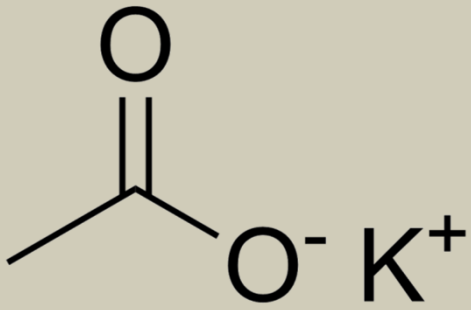
- Find conditions where each deicer works best using the recommended application (for dense mix asphalt).

Study Area Schematic



Potassium Acetate

- Clear, liquid deicer that consists of 50% aqueous potassium acetate by volume, and <1% corrosion inhibitors.
- Has been proven effective on impervious surfaces, and freezes around -76 degrees Fahrenheit.



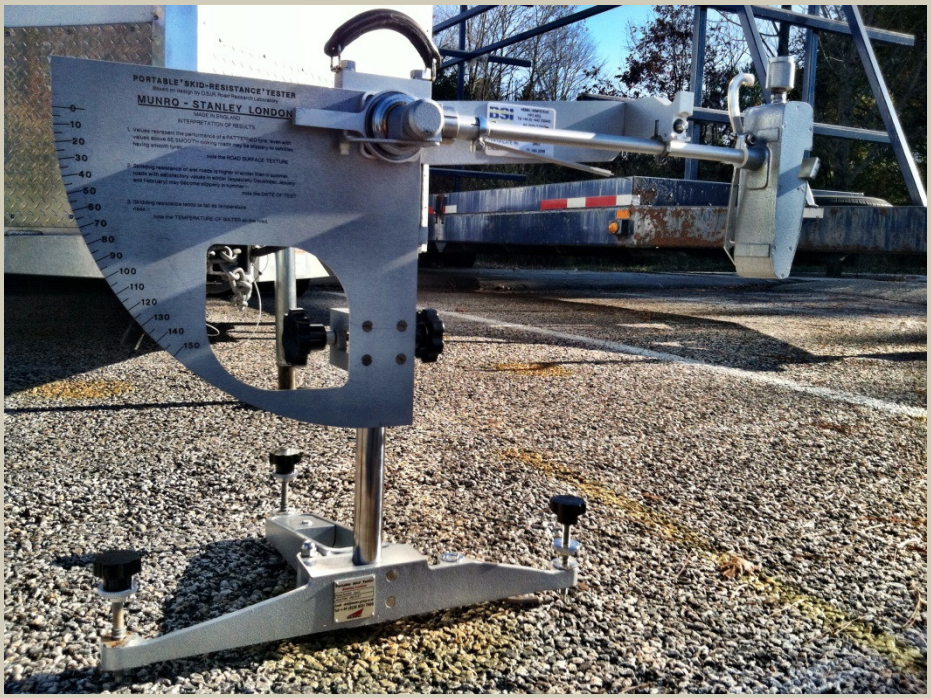
De-Sugared Beet Molasses

- *Desugared Beet Molasses and Brine*– Consists of 20% De-sugared beet molasses and 80% salt brine. Successfully used in impervious pavements in New England and Midwest

- *De-Sugared Beet Molasses and Water*– Consists of 67% desugared beet molasses and 33% water. "Independently" created product and has never been used for this purpose.

Performance Metrics

- Skid Resistance (Friction)
- Percentage of Snow and Ice Cover
- Costs

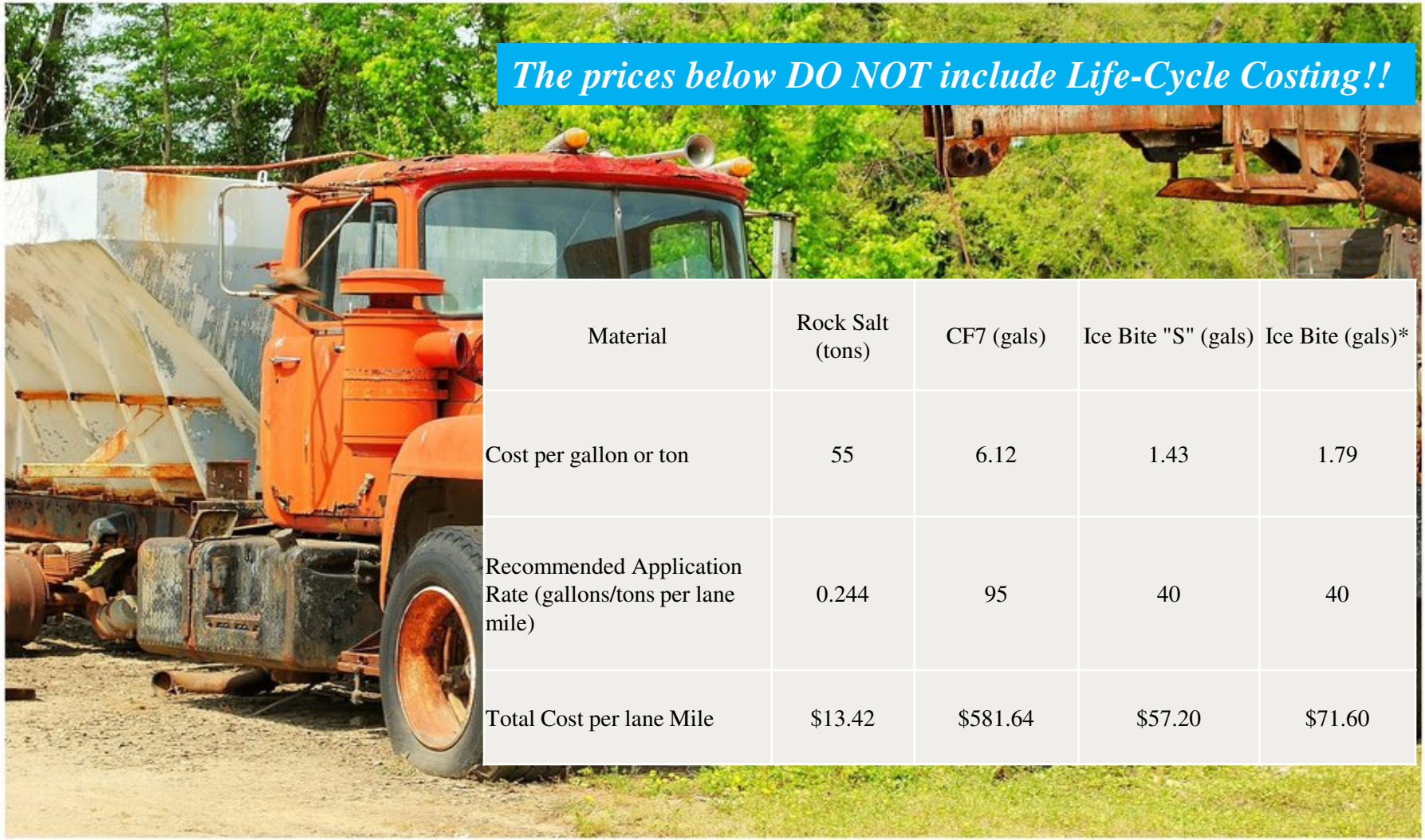


Preliminary Results

- Potassium Acetate and De-Sugared Beet Molasses and Brine both appeared to be more effective than the De-Sugared Beet Molasses and Water.

- De-Sugared Beet Molasses and Brine and Potassium Acetate applied to porous asphalt appeared to be as effective, if not more effective than traditional salting on dense mix asphalt.

Product Cost:



The prices below DO NOT include Life-Cycle Costing!!

Material	Rock Salt (tons)	CF7 (gals)	Ice Bite "S" (gals)	Ice Bite (gals)*
Cost per gallon or ton	55	6.12	1.43	1.79
Recommended Application Rate (gallons/tons per lane mile)	0.244	95	40	40
Total Cost per lane Mile	$13.42	$581.64	$57.20	$71.60

Acknowledgements

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- UNH Parking Services
- Road Solutions, Inc.
- Cryotech Deicing Technologies
- Kris Houle – Past UNH Stormwater Center Research

Questions?

Issues:

- Parking lot snow plowing
- Accidental salting of the study lot
- BPN Drift
  - Controlled in experiment by randomizing the data collection.
- Three different controls; two at different surfaces Acceptable Machine Drift = 1 BPN
- Surface Temperatures – DMA 0% seal coated
  - Temperatures were checked prior to skid testing

PA Lot Cross-Section